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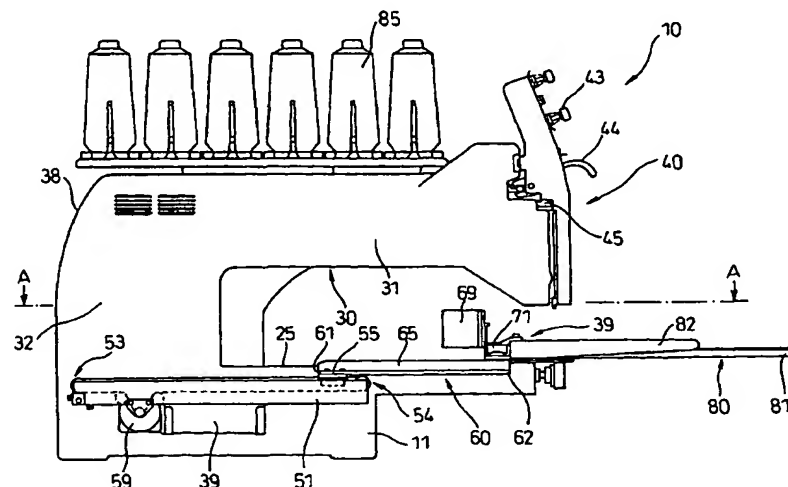
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ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: SEWING MACHINE



(57) Abstract: A sewing machine comprises an arm including a vertical portion and a horizontal portion having at least one sewing needle mounted thereon, a bed extending in parallel to the horizontal portion under the horizontal portion of the arm, two first rails extending in parallel to the bed in the neighborhood of the side portion of the vertical portion of the arm, first carriages adapted to slide on the first rails, respectively, and a second rail connected to the first carriages and perpendicular to the first rails, wherein the distance between the two first rails is shorter than or equal to the length of the second rail, the sewing machine further comprising a second carriage adapted to slide on the second rail, and an embroidery frame unit mounted on the second carriage on the side portion of the second rail located far from the vertical portion of the arm, wherein the first carriages are located on one side of the second rail, and the embroidery frame unit is located on the other side of the second rail. The sewing machine is thus capable of embroidery without being limited by the distance between the rails.

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### A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 692 449 A (MEIER WILLI) 2 December 1997 (1997-12-02) column 2, line 43 -column 3, line 40; figures 1-3	1
A	US 5 005 501 A (KITA FUJIO) 9 April 1991 (1991-04-09) column 2, line 59 -column 3, line 29; figures 1,2,6,7	1,8
A	US 4 280 420 A (HAMAJIMA SHIGEMITSU ET AL) 28 July 1981 (1981-07-28) column 2, line 65 -column 4, line 47; figures 1,3	1,8
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**X** Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 067 262 A (MARUZEN SEWING MACHINE)  22 December 1982 (1982-12-22)  page 14, line 14 -page 18, line 5; figures  1,2</p> <p>-----</p>	8

# INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/JP 03/14030

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5692449	A	02-12-1997	DE 29514286 U1	26-10-1995
			SE 508910 C2	16-11-1998
			SE 9602948 A	07-03-1997
US 5005501	A	09-04-1991	JP 1967175 C	18-09-1995
			JP 2191488 A	27-07-1990
			JP 6093946 B	24-11-1994
			DE 3932226 A1	05-04-1990
			GB 2224290 A , B	02-05-1990
US 4280420	A	28-07-1981	JP 1233183 C	26-09-1984
			JP 55142758 A	07-11-1980
			JP 59007822 B	21-02-1984
			JP 55155898 U	10-11-1980
			JP 55159894 U	17-11-1980
EP 0067262	A	22-12-1982	JP 57200596 U	20-12-1982
			JP 57200597 U	20-12-1982
			JP 57200599 U	20-12-1982
			JP 1460937 C	14-10-1988
			JP 57210051 A	23-12-1982
			JP 63009070 B	25-02-1988
			JP 1460938 C	14-10-1988
			JP 57210052 A	23-12-1982
			JP 63009071 B	25-02-1988
			AR 229530 A1	15-09-1983
			AU 552384 B2	29-05-1986
			AU 7776981 A	23-12-1982
			BR 8107790 A	12-04-1983
			CA 1181290 A1	22-01-1985
			EP 0067262 A1	22-12-1982
			FI 813721 A	17-12-1982
			KR 8600402 B1	17-04-1986
			NO 813955 A , B ,	17-12-1982
			NZ 199057 A	24-08-1984
			PT 74068 A , B	01-12-1981
			TR 22646 A	01-02-1988
			US 4424758 A	10-01-1984
			DK 514681 A	17-12-1982
			ES 507593 D0	01-11-1982
			ES 8307945 A1	01-11-1983